Public Reviewer Comments on Guidance Documents

Typographical or Editorial Suggestions **Comment**	**Response/Suggested Revision**
Natural Conditions - The guidance document has not presented the correct values for some of the proposed natural conditions concentrations and does not acknowledge the large uncertainties in those values. ***David Flannery - API, MOG, and UARG*** ***Frank Van Haren - Washington State Dept. of Ecology***	The values have been corrected and error factors have been included.
Natural Conditions - The glossary of terms provides a flawed definition for "crustal material." ***David Flannery - API, MOG, and UARG***	The definition has been removed
Natural Conditions - The description of deciview in Section 1.6 overstates the virtues of the deciview index. The text in this section should be revised to state that the deciview index was *designed* so that uniform changes in haziness would correspond *approximately* to uniform incremental changes in human perception. ***David Flannery - API, MOG, and UARG***	This revision has been made.
Natural Conditions - The first paragraph of Section 1.11 refers to the IMPROVE methodology for calculating light extinction from measurements of five components of fine mass. Even though the statement cited there was published in the preamble to the Regional Haze Rule, it is not correct. Actually, as noted elsewhere in the guidance document, the coarse mass concentration and an assumed Rayleigh scattering also play roles in the IMPROVE approach to calculation of light extinction. ***David Flannery - API, MOG, and UARG*** ***John Hornback - VISTAS***	A sentence has been added to clarify this point.

Typographical or Editorial Suggestions **Comment**	**Response/Suggested Revision**
Natural Conditions - Footnote 13 at the bottom of Page 2-3 attributes the report on climatological relative humidity calculations to Systems Application International Corporation. The correct EPA contractor is Science Applications International Corporation. ***David Flannery - API, MOG, and UARG***	This error has been corrected.
Natural Conditions - The last sentence of Section 2.3 seems to imply that the software for calculation of f(RH) values is not available to non-government organizations. Was this intended? ***David Flannery - API, MOG, and UARG***	The sentence has been revised to indicate that the software is available to any interested party.
The word saturated is missing from the definition of relative humidity in the glossary. ***Christopher Recchia - MANE-VU***	The definition has been revised.
Natural Conditions - In Section 3.2 on page 3-2, there is a statement that "the natural concentration estimate for a species can never exceed the actual measured concentration of that species over any time period." Similar statements occur at other places in the report. This statement is inappropriate for two reasons. First, as presently worded, one could interpret the sentence to mean that a 24-hour concentration of a species can never exceed a measured 24-hour concentration of that species on another day, which is not correct. Such a situation can occur if the natural concentration occurs on a day with a high natural contribution and the measured concentration occurs on a very clean day. To avoid this confusion, the last few words of the sentence should say, "...of that species at a given time." Second, it is possible that some species concentrations today are less than those under natural conditions. For example, nitrate concentrations today in the East may be suppressed by the abundance of sulfates. If the sulfate concentrations were at natural levels, it is conceivable that, at times, nitrate concentrations under natural conditions might be higher than those that occur today. ***David Flannery - API, MOG, and UARG***	The sentence has been revised.

Public Reviewer Comments on Guidance Documents

Typographical or Editorial Suggestions **Comment**	**Response/Suggested Revision**
Natural Conditions - In Appendix A, a the bottom of page 4-2, the guidance document states that the EPA-sponsored project to examine relative humidity data was limited to relative humidities below 95%. The correct number is humidities less than or equal to 98%. ***David Flannery - API, MOG, and UARG*** ***John Hornback - VISTAS***	This correction has been made.
Figure 2-1 outlines a 9-step process for tracking progress calculations. However, the corresponding text describes a 10-step process with some different headings than the flow sheet in Figure 2-1. These should be coordinated to avoid confusion.	The figure has been revised to include 10 steps
Tracking Progress 2.2 step 3 "Using at least one complete quarter, and preferably all five of the same quarters from a five year period prior to the year under consideration..." This implies that States or regions will have the option of deciding how many quarters of complete data to include. MANE-VU recommends the language be change to read, "Using all complete quarters from the five year period immediately prior to the year under consideration, unless a substantive argument is presented for exclusion of a quarter..." ***Christopher Recchia - MANE-VU***	This sentence has been revised to indicate the calculation will be done with all complete quarters of data.
Tracking Progress 2.2 Step 7 and Section 4.3 need to be reworded to indicate that all complete years of monitoring data must be used if available. ***Christopher Recchia - MANE-VU***	The text has been revised.
Natural Visibility - Section 2-3 and Appendix A We greatly appreciate that EPA has developed site specific monthly f(RH) factors. We would like to point out that the newly developed factors are significantly lower than factors previously used to make light extinction calculations. ***Frank Van Haren - Washington State Dept. of Ecology***	No response needed.

Typographical or Editorial Suggestions **Comment**	**Response/Suggested Revision**
Tracking Progress - There is no Table 1.1. ***Frank Van Haren - Washington State Dept. of Ecology***	The reviewer must not have had a complete copy of the document.
Tracking Progress - P. 1-1: Section 1.1 differs from Section 1.1 in Natural Conditions. Please reconcile ***Mike Koerber - LADCO***	Section 1.1 has been made consistent in the two documents.
Tracking Progress - P. 1-6: Footnote 6 differs from the discussion on Page 1-7 in Natural Conditions. Please reconcile. ***Mike Koerber - LADCO***	Revisions made.
Tracking Progress - P. 1-7: Please omit the paragraph at the bottom of this page. The statutory requirement is to ensure no degradation in visibility for the least impaired days, not to provide for an improvement on these days. Thus, the suggestion here for states to consider adjusting their control strategies to improve best day conditions is not necessary. ***Mike Koerber - LADCO***	Agreed. The text has been modied to say: "If a degradation in best day conditions is observed over time, States may wish to re-evaluate the estimate of natural conditions on best days and consider adjusting their emission reduction strategies, if necessary in order to prevent degradation during those best day conditions."
Tracking Progress - P. 1-8: Please include a figure to go along with the progress example, like Figure 1-1 in the Natural Conditions document. Also, the equation on page 1-11 should be included here. ***Mike Koerber - LADCO***	A figure has been added.

Public Reviewer Comments on Guidance Documents

Typographical or Editorial Suggestions **Comment**	**Response/Suggested Revision**
Natural Conditions - This document should address the relationship between "natural visibility conditions" and the regulatory requirement for states to set progress goals to ensure no degradation in visibility for the least 20% impaired days. ***Mike Koerber - LADCO***	The guidance has been modified to more clearly emphasize that natural conditions are separately estimated for the most impaired and least impaired days. In addition, the guidance indicates that "EPA expects that for most of these areas, emission reduction strategies to improve visibility conditions on the worst days should also lead to improvements on the best days."
Natural Conditions - P. 1-12: Figure 1-2 should be modified to match Figure 3-1 in the tracking progress document. ***Mike Koerber - LADCO***	The figure has been changed.
Natural Conditions - P. 1-14: More discussion on the fire issue is needed. ***Mike Koerber - LADCO***	No change made to the guidance.
Natural Conditions - P. 2-6: Please reconcile the NAPAP sulfate value for the West (i.e. table 2-1 says 0.11 while the examples on page 2-6 say 0.12). ***Mike Koerber - LADCO***	This change has been made.
Ames and Malm paper not peer reviewed ***Terry Ross - CEED*** ***Duane Yantorno - Western Business Roundtable*** ***Chuck Shipley - Arizona Mining Association***	The guidance documents, and consequently the approach presented by Ames and Malm have been peer reviewed.

Public Reviewer Comments on Guidance Documents

Typographical or Editorial Suggestions **Comment**	**Response/Suggested Revision**
Page 1-12 describes the process for defining the 20% most impaired and 20% least impaired days. Further calculations are made based on the averages of these best- and worst-case visibility days. Note that the sampling program is designed to collect 123 samples per year. Since daily values cannot be fractionally divided, this or other totals of valid sampling days can result in extraneous "left-over"days that do not clearly belong in one quintile or it's adjoining one. This issue should be resolved in the revised guidance. ***Kevin Perry - REGFORM***	Text has been added to document to address this issue.
Section 2-3 on page 2-10 describes a process for making use of data from incomplete years to adjust long-term average values when one believes the incomplete data is indicative of a particularly bad or good visibility year. The justification provided is that the change would bring the average "closer to its true value." However, the mere fact that there was insufficient data available to be included in the average indicates that the underlying presumption (i.e., that the data that are available are representative of where the value would have been) is prone to subjective judgment that is not necessarily supportable by science. Thus this guidance should be re-evaluated. ***Kevin Perry - REGFORM***	The language in this section has been revised to clarify this issue.
VISTAS firmly believes that the guidance should be treated as guidance and not treated as a fully adopted regulation. ***John Hornback - VISTAS***	Agreed. No response needed.
NC - Section 3.4 specifies that States wishing to employ a refined approach should demonstrate that the refined approach provides "improved" natural visibility estimates compared to those of the default approach without defining what constitutes an "improved" estimate. ***John Hornback - VISTAS***	Text has been added to clarify this point.

Public Reviewer Comments on Guidance Documents

Typographical or Editorial Suggestions **Comment**	**Response/Suggested Revision**
VISTAS recommends documentation of the regional haze guidance documents decision making process, options considered, and why options were rejected. This is suggested because the program extends over so many decades and expertise will be lost as participants retire. ***John Hornback - VISTAS***	No change made to documents.
MANE-VU supports the use of incomplete data under these specific circumstances, however a demonstration of the benefit of using this procedure should be included in the document. The words “reasonable” and “appropriate” should be replaced with recommended. ***Christopher Recchia - MANE-VU***	Discussion of benefit has been added to the document. Suggested word changes have been made.
The procedure for determining whether average values may be substituted or not is overly complex. If there is a demonstrated benefit to using the procedures described in Step 5, these benefits should be discussed and referenced in the guidance. ***Christopher Recchia - MANE-VU***	Discussion of benefit has been added to the document.
Tracking Progress 2.2. Step 3 "... the quarterly average concentrations...” EPA should specify how quarters are distributed throughout the year (e.g., is winter December-February or January-March) ***Christopher Recchia - MANE-VU***	The guidance has been modified to indicated that quarter is defined as calendar quarter because the rule says calendar year.

Public Reviewer Comments on Guidance Documents

Procedural or Regulatory Issues **Comment**	**Response/Suggested Revision**
MANE-VU is concerned that the refined approach presents an opportunity to relax requirements for visibility improvements and recommends that EPA require strong technical demonstrations before accepting any refined approaches which lead to higher estimated natural deciview levels relative to those obtained though the default approach. ***Christopher Recchia - MANE-VU***	Agreed. No change needed
The Tracking Progress guidance appears to be inconsistent regarding specifically which time periods are to be averaged for calculating visibility conditions in order to track progress. MANE-VU recommends that EPA allow for the use of current conditions in tracking progress based on the most recent five years of available data rather than data from specified time periods. ***Christopher Recchia - MANE-VU***	We agree that the regional haze rule in 308(f) calls for assessment of current conditions based upon the most recent 5 year period. Any specified time periods in the guidance are based on expectations of what that time period is likely to be. We have added further clarification of this point in the guidelines.
EPA should insure that there is more than one IMPROVE sampler vendor and more than one analytical laboratory for IMPROVE analysis in order to foster competition and accountability. ***Reviewer: Sean Fitzsimmons - Iowa DNR***	This is an issue for the IMPROVE program and the agencies involved. No change needed.
EPA should directly fund IMPROVE activities rather than fund them through interagency agreement in order to establish greater accountability for quality and timeliness of IMPROVE work product. ***Reviewer: Sean Fitzsimmons - Iowa DNR***	This issue is not germane to the subject of either document. No change needed.

Procedural or Regulatory Issues **Comment**	**Response/Suggested Revision**
In the guidance, it appears that the burden for developing approaches other than the default approach rests with the State. EPA should be required to revisit and update the state of science for visibility every 10 years and present the results for review to the NAS. ***Reviewer: Sean Fitzsimmons - Iowa DNR***	This is a good suggestion but does not need to be included in the guidance documents. No change needed.
States should be allowed to compute visibility with measured relative humidity instead of EPA's climatological average values when such measurements are available. ***Reviewer: Sean Fitzsimmons - Iowa DNR***	As noted in the guidance, EPA believes it is important for year-to-year trends to track pollutant trends based upon a standard set of relative humidity conditions to be used for all years to adjust measured aerosol concentrations to represent a normalized level of extinction. We believe that the guidelines allow flexibility to determine the most appropriate source of relative humidity data for purposes of developing this standard set of relative humidity conditions.
The documents do not present any procedures for adjusting natural conditions, background conditions, current conditions, or reasonable progress goals for current or projected emissions from international sources. EPA needs to provide to the states clear guidance for tracking, evaluating, documenting and compensating for the impacts on visibility of current and projected emissions from international sources. This would include emissions from point, area, mobile, fire, wind blown dust and other international sources having a significant impact on Class I area visibility. ***Patrick Cummins - Western Governors' Association***	International sources are assumed to be natural in the context of these documents and can be accounted for in a refined approach to estimating natural conditions. No change needed.

Public Reviewer Comments on Guidance Documents

Procedural or Regulatory Issues **Comment**	**Response/Suggested Revision**
Tracking progress - Members of the WRAP FEJF have identified a potential conflict for the WRAP in the consideration of the treatment of visibility data affected by significant events such as wildfires under suppression or windblown dust events. ***WRAP***	The recommendations presented in the guidance documents do not need to be in agreement with WRAP policies. No change needed.
Tracking Progress - P. 2-1: The commitment to perform the necessary calculations and to make the data available on the IMPROVE website is a great service to states and is very much appreciated. One concern, however, is the timeliness of this information. ***Mike Koerber - LADCO***	No change needed.

Procedural or Regulatory Issues **Comment**	**Response/Suggested Revision**
Tracking Progress - P. 3-16: Any consideration of outliers should be consistent with USEPA's exceptional events policy. USEPA is already on record as having stated that "data from exceptional events are not used when making regulatory decisions." According to the exceptional events guidance, it may be possible to use such data for trends analyses, but with caution. ***Mike Koerber - LADCO***	While having such a system of flagging "exceptional events" would provide greater consistency with PM measurements and reporting, it would affect the procedures for computing metrics for regional haze and there is not a critical need for such a system for the visibility program. First, the visibility program is less sensitive to such events due to the use of 5-year averages of the worst 20% days. The NAAQS focuses on the top 2 percent of days within a 3-year period. Second, there is no specific regulatory implication were an extreme regionally representative event to be included, even in the unlikely event that such events would lead to an area not meeting its reasonable progress goals. The State would merely need to explain the effect that the event has had. At this time, EPA believes that the need for consistency with the PM probably does not outweigh the added complexity that would result from developing an exceptional events system for visibility.

Public Reviewer Comments on Guidance Documents

Procedural or Regulatory Issues **Comment**	**Response/Suggested Revision**
EPA has not addressed the impact of its proposed actions on energy supply, distribution or use. ***Terry Ross - CEED*** ***Duane Yantorno - Western Business Roundtable*** ***Chuck Shipley - Arizona Mining Association***	The impacts of the guidance documents on energy supply, distribution, or use does not need to be addressed in these documents. No change needed.
EPA's regulatory process for determining Natural Conditions is a Legislative Rule and is therefore subject to the requirements of the Federal Administrative Procedure Act. ***Terry Ross - CEED*** ***Duane Yantorno - Western Business Roundtable*** ***Chuck Shipley - Arizona Mining Association***	The procedures for determining Natural Conditions are presented as guidance with clear avenues for alternative approaches. No change needed.
By excluding the substantial air quality impacts from fires, EPA is unduly and arbitrarily burdening stationary sources. ***Terry Ross - CEED*** ***Duane Yantorno - Western Business Roundtable***	EPA believes strongly that we are not in any way suggesting in either the haze rule, or in this guidance, that States exclude consideration of the impacts of fires.
More IMPROVE monitoring stations are required to cover **all** Class I areas. ***Terry Ross - CEED*** ***Duane Yantorno - Western Business Roundtable***	It is not necessary to establish a site for each Class I area in order to determine regional haze, but rather that there must be a network that provides visibility measurements that are representative of visibility in nearby Class I areas. No change made to document

Public Reviewer Comments on Guidance Documents

Procedural or Regulatory Issues **Comment**	**Response/Suggested Revision**
Because EPA's draft guidelines would impose binding regulatory mandates that would constrain state authority in making reasonable progress determinations. As such, the guidance is in clear violation of CAA 169A. ***Terry Ross - CEED*** ***Duane Yantorno - Western Business Roundtable***	The guidance documents to not impose binding regulatory mandates. No change needed.
The proposed guidance (1) is not consistent with the CAA requirements, (2) is likely to be much more costly than EPA estimates, and (3) may substantially conflict with rational energy planning and sound environmental policy on the state, regional, and national levels. ***Terry Ross - CEED*** ***Duane Yantorno - Western Business Roundtable***	This technical guidance is consistent with the requirements of the CAA and the regional haze rule. Moreover, it is EPA's hope that providing consistent methods for tracking progress will facilitate a common understanding of the effectiveness of regional air quality strategies. We also note that those strategies, when they are developed, must take costs and energy considerations into account.

Public Reviewer Comments on Guidance Documents

Procedural or Regulatory Issues **Comment**	**Response/Suggested Revision**
Beginning on page 1-8 the document describes the procedure for calculating the rate of progress goal. This process requires that the goal be set based upon a straight-line interpolation of the deciview difference between the baseline and the natural condition. Such an approach is heavily front-end loaded in favor of disproportionately large emission reductions at the outset. This overly aggressive approach is ill-advised and should be reexamined in light of the issues raised. ***Kevin Perry - REGFORM***	EPA believes it is appropriate to consider the "60 year glide path" point as one option. We believe that in most areas, this is a good benchmark to ensure that the haze strategies consider a reasonably aggressive rate of progress in the planning progress. This is not, however, an absolute requirement and other rates of progress may be considered based upon the statutory factors identified in 40 CFR 51.308(d)(1)(i)(A).
VISTAS is concerned about the statement in Section 1.2 of the Tracking Progress document concerning revision of the guidance without public notice. ***Ditto - Christopher Recchia - MANE-VU***	EPA reserves the right to make minor changes to the documents without public notice. Public notice will be made in the case of Substantial changes. No change needed.
Concerning Section 1.11 of the Tracking Progress guidance, one year is an inadequate time to perform an analysis, develop a SIP revision and take that SIP revision through the public hearing and state adoption process. More time needs to be allowed for this SIP revision. The guidance suggests that if a state is not meeting goals for reasonable progress, the state has 1 year to revise the SIP if impacting sources are within the state. If impacting sources are from out of state, then a longer period of time is allowed before the SIP revision. VISTAS recommends that the guidance be changed to say: "If there is a failure to meet reasonable progress goals, the state must submit a schedule for the analysis of the failure, and a commitment that the shortfall will be addressed at the next SIP update." ***John Hornback - VISTAS***	The one year requirement is in 40 CFR 51.308(h) of the regional haze rule. The EPA believes that while this timeframe is tight, it would not be reasonable to wait the full five years if it is determined that all actions needed are within the State in question.

Procedural or Regulatory Issues **Comment**	**Response/Suggested Revision**
As written, the guidance implies that the RPO is discontinued unless states are making reasonable progress. It is the VISTAS perspective that the RPO process would continue after the initial SIP submittal and that the States and Tribes would work together to analyze the reasonable progress, then continue working for the SIP updates due every ten years. ***John Hornback - VISTAS***	We agree that the rule calls for a comprehensive process every ten years. We are not intending to make any statement or implication here regarding the future of the RPO process that is currently being funded.
Tracking Progress 1.11 & Natural Conditions 1.9 "If the lack of progress is primarily due to emission from outside the State then the State may need to reinitiate the regional planning process to address this problem in the next major SIP revision (e.g., in 2018)." MANE-VU requests clarification as to the scope of "reinitiating" the planning process. Does EPA intend to repeat all of the regional haze planning efforts that are being conducted for 2008 SIP submission every 5 years? ***Christopher Recchia - MANE-VU***	No. The rule calls for 5-year progress reports, with the full process every 10 years.
Tracking Progress 1.11 & Natural Conditions 1.9 "If the lack of progress is primarily due to emission from within the State, then the State may need to revise its implementation plan within 1 year..." One year is not sufficient time for some jurisdictions to complete a SIP revision, as this process may entail public notification, hearings, and submission of documents to regional EPA offices for approval. ***Christopher Recchia - MANE-VU***	The one year requirement is in 40 CFR 51.308(h) of the regional haze rule. The EPA believes that while this timeframe is tight, it would not be reasonable to wait the full five years if it is determined that all actions needed are within the State in question.
Tracking Progress 1.11 & Natural Conditions 1.9 "After the initial SIPs are approved, States will conduct formal progress reviews (in the form of a SIP revision) every 5 years (e.g., in 2013 if the initial SIP is submitted in 2008)." MANE-VU requests clarity on whether the 5-year time frame is relative to SIP submission ro SIP approval. ***Christopher Recchia - MANE-VU***	Per 40 CFR 51.308(g), this is due 5 years from SIP submittal.

Public Review Comment Issues Comment	Response/Suggested Revision
Tracing Progress 1.7 & Natural Conditions 1.7 "Specifically, a State is required to set progress goals for each Class I area in the State..." MANE-VU feels that the guidance should strongly emphasize that the process of setting these progress goals is intended to be a cooperative activity handled through the regional planning process. However, MANE-VU is also concerned that mechanisms do not exist within the currently defined RPO process for developing consensus on reasonable progress goals and control options between States in different RPOs. EPA should provide additional detail on this process. ***Christopher Recchia - MANE-VU***	EPA recognizes that conflicts may ensue over development of reasonable progress goals. This recognition leads to the inclusion of 51.308(d)(1)(iv) for consulting with other States. EPA hopes that the RPO process and discussions should facilitate the development of appropriate regional progress goals and improve the chances for consensus.
Tracking Progress - 1.7 "In their initial SIPs, States are expected to ..." Please be specific about which SIP submission is considered the "initial" SIP. States are required to submit "committal SIPs" prior to 2008 that may be confused with the SIP to which this passage refers. ***Christopher Recchia - MANE-VU***	We have added clarification that these are the initial control strategy SIPs.

Technical Issues or Clarifications **Comment**	**Response/Suggested Revision**
The guidance should include a requirement to classify worst haze days as regional or local in nature based on correlation with nearby IMPROVE monitors. ***Reviewer: Sean Fitzsimmons - Iowa DNR***	This is an interesting suggestion but no revision to document is needed.
The guidance lacks specificity in explaining how exceptional events are handled. (i.e., local campfire, prescribed field burning, international transport). ***Reviewer: Sean Fitzsimmons - Iowa DNR***	Section 3.10 discusses how to handle outliers. No changes made to document.

Public Reviewer Comments on Guidance Documents

Technical Issues or Clarifications **Comment**	**Response/Suggested Revision**
The guidance should include draft method performance testing procedures for the IMPROVE sampler and associated sampling and analytical methods. The guidance should also establish criteria for equivalent methods so that continuous monitors can be integrated into the IMPROVE network. ***Reviewer: Sean Fitzsimmons - Iowa DNR***	These are IMPROVE issues. No change made to documents.
Nitrate and sulfate hydration curves are assumed to be the same. ***Reviewer: Sean Fitzsimmons - Iowa DNR*** ***Terry Ross - CEED*** ***Duane Yantorno - Western Business Roundtable*** ***Chuck Shipley - Arizona Mining Association***	Section 3.5 presents discussion and justification for use of hydration curves.
Averaging over sulfate efflorescence-deliquescence "hysteresis" hydration curve is used to obtain f(RH)...one needs to know whether the particle has most recently passed through the deliquescence RH or the efflorescence RH, and choose the appropriate hydration curve. ***Reviewer: Sean Fitzsimmons - Iowa DNR***	This approach is beyond the scope of the procedures described in the guidance. No changes needed.
The guidance assumes f(RH)=1 for organics. ***Reviewer: Sean Fitzsimmons - Iowa DNR*** ***John Hornback - VISTAS***	Justification for this assumption is in the document. No changes needed.
When more than eight hours a day exceed RH>95%, the day was not included in the climatological data set to determine average RH values. Consistent with this approach, the speciated data should be excluded from the IMPROVE sampler data set during days that meet this criterion. ***Reviewer: Sean Fitzsimmons - Iowa DNR***	Speciated data from the collected samples does not suffer from the same problems as the measurement of high RH values. No changes needed.

Public Reviewer Comments on Guidance Documents

Technical Issues or Clarifications **Comment**	**Response/Suggested Revision**
Natural Conditions - The resulting distribution of natural condition deciview values has a major discontinuity in the middle of the continent which is scientifically unsound and presents an operational challenge when emissions management strategies for the central states are evaluated with an air quality model. ***Larry Byrum - CENRAP*** ***Pamela Faggert - Dominion*** ***Sean Fitzsimmons - Iowa DNR*** ***Katie Hornbarger - American Forest and Paper Association***	The discontinuity in the center of the country results from the default approach to estimating natural conditions. Refined approaches may be adopted. No changes needed to documents.
What role will comparison of the reconstructed fine mass to the gravimetric mas play in validating the IMPROVE data? Will data be invalidated if the gravimetric mass and the chemical constituent mass are inconsistent? Will high field or trip blanks result in invalidated samples? ***Reviewer: Sean Fitzsimmons - Iowa DNR***	These issues are taken care of by IMPROVE QA protocols. No changes needed.
Does the IMPROVE program establish minimum numbers of collocated monitors? If so, what are the precision goals for these pairs? Is their a mobile monitor audit program for the IMPROVE data? Will data be invalidated if a sampler fails a flow audit conducted by UC Davis? How much dat will be lost if a flow audit is failed at the current audit frequency? ***Reviewer: Sean Fitzsimmons - Iowa DNR***	These issues are taken care of by IMPROVE QA protocols. No changes needed.
Natural Visibility - Section 1.14 It is unclear in the second paragraph, fourth sentence, whether organic carbon and elemental carbon from fire emissions was actually included in the default values or whether the NAPAP report just recognizes that it should have been part of the estimated values. ***Frank Van Haren - Washington State Dept. of Ecology***	The NAPAP estimates do include contributions from fire. No change made.

Public Reviewer Comments on Guidance Documents

Technical Issues or Clarifications **Comment**	**Response/Suggested Revision**
Natural Visibility - Section 2.1, 2.2 and Appendix B Table 2-1 present the estimated natural mass default values for each aerosol component. Based on recent actual measured values from two IMPROVE sites in Washington state (Mt. Rainier and Snoqualmie Pass for the period 12/95-12/98) the default natural estimates in Table 2-1 are greater than the average measured values for the soil and coarse mass components. ***Frank Van Haren - Washington State Dept. of Ecology***	Section 2.2 of the document discusses this situation. No change made.
Tracking Progress - P. 3-12: Further justification for the reconstructed light extinction equation (Equation 6) is desired, especially for the eastern half of the U.S. ***Mike Koerber - LADCO***	This section has been rewritten.
Natural conditions are not well defined and EPA does not appear to recognize that natural background includes not only a global aerosol but also the local effects of natural emissions from windblown soil, effects of animals, plants, wildfire, oceans, volcanoes, etc., and thus the resulting ambient concentration attributable to these natural sources changes just as it does for anthropogenic emissions. (Potentially arbitrary approach has been developed.) ***Terry Ross - CEED*** ***Duane Yantorno - Western Business Roundtable*** ***Chuck Shipley - Arizona Mining Association***	The document states that "…natural visibility conditions are not constant, but rather they vary with changing natural processes (e.g. windblown dust, fire, volcanic activity, biogenic emissions)."
The f(RH) function is not clearly documented, is used inconsistently, and does not appear to have received impartial scientific review. ***Terry Ross - CEED*** ***Duane Yantorno - Western Business Roundtable*** ***Chuck Shipley - Arizona Mining Association*** ***David Flannery - API, MOG, and UARG*** ***John Hornback - VISTAS*** ***Katie Hornbarger - American Forest and Paper Association***	This section has been revised.

Public Reviewer Comments on Guidance Documents

Technical Issues or Clarifications **Comment**	**Response/Suggested Revision**
Natural Conditions - The implications of major assumptions in the IMPROVE formula for calculating light extinction have not been acknowledged. ***David Flannery - API, MOG, and UARG*** ***Pamela Faggert - Dominion*** ***Katie Hornbarger - American Forest and Paper Association***	This section has been rewritten.
Natural Conditions - The procedure for estimating the 20% haziest and 20% clearest days under natural conditions is poorly documented, involves application of significant judgment, and does not appear to have received impartial scientific review. ***David Flannery - API, MOG, and UARG*** ***Pamela Faggert - Dominion*** ***John Hornback - VISTAS***	The guidance documents, including the estimation process, have been peer reviewed.
Tracking Progress - The method proposed for tracking progress may not be sufficiently sensitive or precise to unambiguously establish progress, or lack thereof, at five-year review intervals at locations with good visual air quality, such as parts of the West. ***David Flannery - API, MOG, and UARG*** ***Pamela Faggert - Dominion*** ***Katie Hornbarger - American Forest and Paper Association***	It is recognized that there may be uncertainties that obscure analysis of trend in visual air quality. However, the proposed method is thought to be robust enough to establish trends with sufficient accuracy to meet the requirements of the CAA. No change made.
Tracking Progress - Contrary to statements in the document, good agreement between measured and calculated extinction has not been established for the entire IMPROVE network. ***David Flannery - API, MOG, and UARG*** ***Kevin Perry - REGFORM*** ***John Hornback - VISTAS***	This section has been revised

Public Reviewer Comments on Guidance Documents

Technical Issues or Clarifications **Comment**	**Response/Suggested Revision**
Since deciview is logarithmic, the reduction in light extinction required is substantially greater than a proportionally linear reduction. Because emission reductions are more directly related to light extinction than deciviews, the end result is a front-end loading of the process that will have a dramatic impact on the emission reduction strategy that will be required to achieve the "rate of progress goal." ***Kevin Perry - REGFORM***	Although deciview is logarithmically related to extinction, it is linearly proportional to visibility. The Regional Haze Rule specifies a linear reduction.
EPA must account for uncertainties in the predictive schemes for setting starting and end points for the program and in establishing initial goals. If the guidance fails to account for all the natural processes that contribute to visibility impairment in the absence of anthropogenic influences, or if it inappropriately accounts for the effects of relative humidity or it forces the unnecessarily early reduction from existing sources, then it may do more harm than good. The procedures should not adopt an approach that allows redundant conservative assumptions in the estimation techniques at this early stage. Rather it should adopt a step-wise approach that allows time to observe and evaluate the initial effects of limited controls and time for new technologies to develop and be implemented. Such a prudent approach will insure the most effective program at the least cost consistent with the statutory mandate. ***Kevin Perry - REGFORM***	This comments speaks more to the Regional Haze Rule than the guidance document.
On page 2-4 there are several references to the possibility of getting a "negative" result after subtracting one value from another. Presumably this is to account for the reality that these values cannot be negative. However, such an adjustment ignores the inherent imprecision in the values and introduces an artificial bias. It would be more appropriate to make such adjustment, if necessary, after the average has been calculated. As it is, by only adjusting the value on the lower end, a bias is introduced that causes an inaccurately high value to be calculated. ***Kevin Perry - REGFORM***	The guidance document has been changed to address this comment.

Technical Issues or Clarifications **Comment**	**Response/Suggested Revision**
At the bottom of page 3-8 EPA acknowledges that "the sulfate f(RH) function is quite different for the East than the West because of sulfate ammoniation." Yet, it then concludes on page 3-9 that the same ammonium sulfate (curve should be used for both). ***Kevin Perry - REGFORM***	Justification for this assumption is in the document. No changes needed.
IMPROVE assumes that all sulfate is ammonium sulfate. Recent NH4 monitoring by IMPROVE as Great Smoky Mountains, TN, Shenandoah, VA, and Dolly Sods, WV indicated that sulfate aerosols frequently occur as sulfuric acid and ammonium bisulfate. ***John Hornback - VISTAS***	True but it is not felt that this would result in large errors because of other offsetting factors. Additionally, this data is not available on a routine basis.
Equation 1 implicitly assumes that the same f(RH) is appropriate for varying levels of sulfate ammoniation, although there is no explicit statement to that effect and the Tracking Progress document states that "the sulfate f(RH) function is quite different for the East than West because of sulfate ammoniation." ***John Hornback - VISTAS***	The degree of ammoniation varies by season and location, therefore, the ammonium sulfate curve is used for consistency.
The guidance relies on the use in the IMPROVE formula of fixed extinction efficiencies for each of the mass components even though Malm describes different coefficients for various species. Furthermore, the composition and structure of aerosol under natural conditions is likely to be different than under polluted conditions (from which these extinction efficiencies were derived). This uncertainty should be addressed. ***John Hornback - VISTAS***	This section has been rewritten.
In Section 3.2 EPA proposes that a refined approach to estimating natural background levels "might account for infrequent natural events, such as forest fires or wind-blown dust, as major influences on visibility" without explaining how to do so in the context of Section 1.14's assumption that Trijonis' estimates of natural background concentrations included the natural regional contribution by fire. ***John Hornback - VISTAS***	Developing refined approaches is optional and is the responsibility of the State. No change needed.

Public Reviewer Comments on Guidance Documents

Technical Issues or Clarifications **Comment**	**Response/Suggested Revision**
VISTAS recommends a more thorough emphasis on the need to take into account differences in measurement methods when looking at trends. This is true whether using speciated PM monitored data compared to federal reference method or IMPROVE. VISTAS also recommends that data other than IMPROVE data should be acceptable for the purpose of tracking progress. For example, if monitoring data is available in or near a Class I area for species such as NH4, this data should be used since this species is not measured by IMPROVE, and an understanding of what is happening with the NH4 trend will be useful in understanding the whole visibility picture. ***John Hornback - VISTAS***	Tracking relies on measurements taken as part of the IMPROVE program. Changes in measurement methods may be implemented if equivalence is demonstrated. No change needed.
The guidance needs to better address which types of fires will be considered in the tracking progress analysis. In addition, it appears that a tracking database is needed for this effort. VISTAS recommends that EPA develop such a tracking database and provide guidelines on the necessary information needed to be collected for these purposes. ***John Hornback - VISTAS***	Data impacted by fires should be flagged for consideration as described in Section 3-10. No changes needed.
The section on missing data needs to be tested, so that the meaning of the guidance is clear. VISTAS members read through the guidance several times before understanding the process. VISTAS recommends that the approach be field tested to ensure that the guidance can be followed consistently. ***John Hornback - VISTA***	Test calculations were conducted in developing the missing data review process. Refinement of the approach may occur as it is implemented.
The last sentence of Section 3.3 should also note that in some locations, a major constituent of the coarse mass fraction is sea salt or its reaction product sodium nitrate. ***John Hornback - VISTAS***	This section has been revised.
The "good agreement" between measured and calculated extinction that is attributed to Malm et al., was only established for 18 western IMPROVE sites, not, as suggested here, for the entire IMPROVE network. ***John Hornback - VISTAS***	This section has been revised.

Technical Issues or Clarifications **Comment**	**Response/Suggested Revision**
The 10-year period for f(RH) calculations may not be appropriate up to 2064. Does EPA intend that the 10-year period that has ben analyzed should serve as the basis for all regional haze calculations in the future? ***Pamela Faggert - Dominion***	The f(RH) calculations are intended to serve as the starting point for tracking trends in visibility. Periodic revisions of these values may be necessary. No changes needed.
The guidance document does not properly acknowledge the large uncertainties in the concentrations of various atmospheric components which contribute to visibility impairment and which are used in the estimation of natural visibility conditions. Estimating natural conditions is extremely difficult and it is very important to properly characterize uncertainties present in any estimate of natural conditions. ***Pamela Faggert - Dominion***	Error factors have been included in the table of default natural levels of aerosol components.